

Virginia Ocean Plan

FY15 Task 95.01

Final Report, Grant Period October 1, 2015 to March 30, 2017

Grant# NA15NOS4190164

Compiled by Todd Janeski, VCU, Department of Life Sciences

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Overview

The VCU Environmental Scientist/Analyst, as retained by the Virginia Department of Environmental Quality, Coastal Zone Management Program, served as the Ocean Planning Stakeholder Engagement Coordinator (OPSE) for the grant reporting period under the VACZM Section 309 Ocean Resources Strategy. During this period, a single primary task was undertaken: Ocean Stakeholder Engagement with the Virginia CZM Program in the Commonwealth's Ocean Planning initiative.

Ocean planning in the Commonwealth includes a partnership, the Mid-Atlantic Regional Council on the Ocean (MARCO), which includes representatives from the States of New York, New Jersey, Delaware, Maryland and Virginia. The broader MARCO effort is being supported through several contractors such as Monmouth University, University of Delaware, Rutgers University, Nature Conservancy, and NatureServe. Primarily, ocean planning brings together the sectors of Ports and Navigation, Military, Commercial Fisheries, Recreational Users, Alternative and Traditional Energy, Conservation, Tourism, and Local Government. These sectors have been brought together both in the Commonwealth as well as in the region to share information regarding ocean uses for the purpose of understanding the complexity of overlapping and abutting uses.

Ocean Planning

During the reporting period, the OPSE Coordinator worked to support the VZCM Director and directly engaged with the commercial and recreational fishing sectors to convey information and obtain feedback to continue the forward progress on ocean planning.

At the request of the MARCO Executive Director in addition to the VCZM Director, the OPSE Coordinator attended the Mid-Atlantic Fisheries Management Council Meeting in Annapolis, December 9, 2015. The intent of the attendance was to meet directly with attendees and industry representatives to share information on the MDAT and Communities at Sea (C@S) data to obtain feedback on the data and usability. The VA OPSE Coordinator was part of a team effort by the MARCO Director, TNC, and State of Maryland to field input from attendees. Participating attendees (commercial fishing, charter and recreational fishers) were asked to help compose language for any caveats about the fisheries data that should be included with the data layer as it is posted in the MARCO Ocean Data Portal. While attendance during this breakout was limited, it was well received by those in attendance. The OPSE Coordinator engaged with the Long Island Commercial Fishing Association, SeaFreeze, Town Dock, Garden State Seafood Association, FMC Representatives, and commercial and recreational contacts from VA, NY and NC. Specific questions used to loosely guide the discussion included:

(1) What language would you like added for any caveats or other narrative descriptions to accompany the metadata for these data?

(2) What ideas do you have for better ways to collect data in the future for the regional ocean planning community to consider in the long-term?

(3) Would you like to be included in future related outreach efforts for long-term ocean planning?

(4) How could we better engage fishermen in the future?

Participants preferred to have information recorded as part of a group discussion rather than attributed to any single individual. Below is a summary of comments that were projected on the screen at the close of the session and generally agreed to by the participants. These key points can be used (1) to develop next steps in the Portal Team's work plans, (2) to inform caveat language for inclusion in metadata across each data product and (3) to assist additional outreach efforts with individual fishing communities.

Communities at Sea:

- Just looking at most recent 3 years is not sufficient – possibly can address before plan is complete.
- Accuracy difference between fixed and mobile gear
- Fixed vs mobile gear differences need language to clarify how reported and displayed
- State licensed fishing efforts not captured by VMS or VTR
- Add fisheries mgmt. areas to Portal & include impact of area closures and other regulations (seasonal and long term) to be considered in interpretation of the maps (e.g. for r species that were unable to be landed)
- Supplement VTR with higher accuracy VMS, showing fishing vs. transiting (for the subset of fisheries where VMS is required/available).
- In general – need to tap and incorporate fishermen's knowledge & logs of historic conditions, status of diverse resources
- This is not comprehensive, need to go through major stakeholder engagement before any projects considered – this goes for all products
- Socio-economic data is underestimated by orders of magnitude for example when estimating the value of an area for a year (like in wind farm project descriptions)
- VTR paper data doesn't include all socio-economic information, should use individual plotter data
- VTR works great for fixed gear not for mobile gear – so less accurate for multi-day trip which are the majority of trips for mobile gear
- Include greateratlantic.fisheries.noaa.gov layers to err on inclusiveness to turn on/off
- Proximity from port to area is not a way to identify user groups- RI boats go Canada to Norfolk canyon- doesn't capture all information
- Fish come in cycles- fished stocks historically in an area even if not fishing there in the timeframe of the data (doesn't accurately show "important" areas)
- Management decisions – wrong years to use to really see what the port is capable of (LI fishermen have 200 years of history to show where used to fish, good spots over time)
- Suggest to show 98 SFA, prior to 98 SFA, 2008; need to show stocks that we may get

access to later again- C@S used the worst years possible because it just shows the contraction of industry – not where they once were and could be again if stocks come back and regulations open up

- Suggest to go back to minimum of 10 years- go back to 1990 if possible and to end as recently as you can (2014?); need larger period than three years
- Challenge in how to represent sig fishing while managing the Rule of Three – if you have two big boats, they end up not being represented at all
- Consider transfer of data through non-disclosure agreement at Rutgers

MDAT:

- Seasonality limitations in NMFS trawl survey
- Species gaps limitations in NMFS trawl survey
- Evaluate whether NJ trawl survey can be incorporated into version 2 products
- Should indicate sample size for all models in addition to representing standard error
- NMFS trawl surveys occur in spring and fall only, but the fish are moving inshore/offshore in winter- survey doesn't always capture – this is only a snapshot- other areas may be more productive that aren't shown; using the trawl survey as an index is insufficient so you need to talk with industry prior to project siting
- NMFS trawl surveys don't capture all species
- Young of the year are caught in the NMFS survey- so it does include small fish- if you know how to use the database correctly
- NEMAP and NMFS data should be integrated together (however still deemed insufficient if combined)
- Marine mammal locations appear to be accurate from spot checking with two participants involved in Take Reduction teams and dolphin cruises
- One participant was interested in for hire data and staff explained we don't represent that well due to Rule of Three; need to work with Rutgers on 2014 database to show break outs between party and charter boats
- Question on using lobster data based on who has a federal permit- does this bias the data? Suggested to consult with ASMFC and individual states
- NOAA Office of Protected Species suggest map groupings by ESA listed species- participants didn't have feedback otherwise or concern
- Interest in looking at oceanographic conditions as overlay to explain why species are in a certain location at a certain time (eg take into account quarter of degree temp changes)

Future Engagement:

- Early ongoing multiple opportunities are needed over a long period of time to offer repeated chances for fishermen to participate due to weather and fishing schedules
- Combination of webinars and in-person discussions recommended depending on preference of fishermen
- Identify the best list serves and get information on project proposals out as soon as possible to the community

- Regardless of level of engagement or vetting, fishermen need to be explicitly reached out to as early as possible in project proposal processes around specific project activities and asked for their feedback; no planning data alone is sufficient
- Long-term interest of eventually having the fishing community at the table to help select specific sites for proposed projects

The OPSE Coordinator participated in the Inter-Jurisdictional Committee (IJC) working group and MARCO meetings on Nov 10, Dec 2, focused on fisheries issues (commercial and recreational) to ensure consistent delivery of new, accurate data to the industry. The OPSE Coordinator also assisted NOAA in the development of the Mid-A RPB whitepaper on IJC, *Improving Interjurisdictional Collaboration on Fisheries Science and Management* (see Appendix 1). This whitepaper outlines the following general steps to increase collaboration on fisheries management including:

1. Build closer relationships and better understanding between NOAA and state fisheries agencies by convening an annual meeting between regional NOAA leadership and state fisheries directors to discuss areas of mutual interest.
2. Improve our understanding of and preparation for climate change impacts on fishing by supporting a workshop for fisheries managers and scientists to share information about climate change.
3. Work to identify and monitor fishing impacts on the environment and the impacts of other human activities on fishing in collaboration with the Mid-Atlantic Fishery Management Council.

The OPSE Coordinator attended the Mid-Atlantic Regional Planning Body meeting in Baltimore, March 22-24. The Mid-A RPB meeting provided the opportunity to interact directly with the sectors with specific focus on the commercial fishing interests. These opportunities included communicating with representatives from Garden State Seafood Association, representatives of the scallop industry and Center for Sustainable Fisheries. Social capital building provided for continued relationship development with the industry and solidifying the Commonwealth's position with the industries.

While limited, the OPSE Coordinator was requested to provide technical assistance to a commercial fishing panelist on the Ocean Frontiers panel held at Old Dominion University. Technical assistance was in the form of personal communication on the issues pertinent to the topic and to prepare the panelist for their requested role on February 19 and 22, 2016. The panelist requested assistance with presentation preparation and familiarization with the documentary and to provide an update on the most recent changes and advancements in ocean planning. The panelist also requested information on the role that the commercial fishing sector has been provided and requested to be further included when significant opportunities arises. Further discussions included an understanding of how best to include and engage the commercial sector as Virginia progresses on ocean planning issues. This demonstrated level of trust has come through the OPSE Coordinator's willingness to be available for consultation.

July 2016, the OPSE Coordinator attended the MARCO Open House Listening Session at the

Virginia Aquarium & Marine Science Center (see Appendix 2 for Save the Date Card). The MARCO Executive Director requested the Coordinator to staff the offshore energy poster to interact with participants encouraging them to engage on other topics and continue to develop a strengthened position for Virginia. During the session, several BOEM personnel were present and staffed the poster to field the majority of the direct interaction. This allowed the OPSE Coordinator to further engage the attendees, specifically those in the commercial fishing sector that were present during the meeting. Conversations with the commercial fishing sector focused on the recent Collaborative Fisheries Planning project and the question on the possible development of offshore alternative energy. The inclusion of fishing industry representatives from the UK was discussed and accepted as a good source of input considering their experience with the issues. The commercial sector engaged with during the meeting represented the gill-net industry; conclusion from those conversations were focused on understanding that they are not missed during the progress on ocean planning in VA waters. These opportunities continue to strengthen the relationship between the offshore commercial fishing industry and the VA Coastal Zone Management Program.

The OPSE Coordinator provided direct support for MARCO Marine Life Data Analysis Team (MDAT) attending meetings through the fall of 2015 working with the MARCO Director and TNC. In August, 2016, the OPSE Coordinator joined the MARCO Management Board in Baltimore for their workshop to improve access to those data. Preparation leading up to the meeting allowed for an understanding of the support role being requested by the MARCO Portal Team. During the meeting the OPSE Coordinator facilitated breakout sessions and then worked closely with a Research Analyst at the Duke University Marine Geospatial Ecology Lab to summarize the notes collected. Notes from those facilitated sessions are attached in the Appendix 3. The Baltimore workshop obtained feedback on various aspects of the MDAT development process including how to define and identify Ecologically Rich Areas, the possible temporal aspects and explored new sources and underutilized sources of data that might inform the MDAT such as the avian catalog. Post event, direct conversations with the commercial fishing industry were conducted to vet the Community at Sea maps, during those conversations, the OPSE Coordinator encouraged participation from the industry to review the MDAT data prior to being presented in an online manner. Most of the feedback from the industry was based on the Communities at Sea maps because they more informed the process for the VA WEA Collaborative Fisheries Planning project and had tangible, ready documents to analyze.

In the fall 2016, the OPSEP Coordinator was requested to provide limited guidance to the VA Aquarium & Marine Science Center on a proposal to nominate the Norfolk Canyon as a National Marine Sanctuary seeking feedback on the commercial and recreational sectors. Specifically, the Coordinator outlined general suggestions to engage the offshore commercial and recreational fishing sectors to communicate their proposal, the importance and how those sectors might be affected by the designation. To provide limited support, the OPSE Coordinator communicated with both representatives of the commercial and charter fleet to interpret their position on such a proposal, if one was to be submitted. In general, both sectors were not supportive of such a proposal since the most recent coral protections had been discussed through the MAFMC. The sectors indicated they were unclear of how the new designation would differ from that of the proposed deep canyons changes. Of note, a documented response from the charter industry representative indicated support stating it would not affect their activities. However, their social

media post strongly represented a contradictory position and paraphrased the conversation.

The OPSE Coordinator was nominated by the Governor McAuliffe Administration to the BOEM Offshore Renewable Energy Task Force. The Coordinator attended the Task Force meeting in Virginia Beach on September 22, 2016 at the Virginia Beach Wyndham and participated in the discussion after Dominion had presented an update on the status of their lease in VA Wind Energy Area and the Research Lease area. The Collaborative Fisheries project was cited as an example of engagement opportunities and how the wind industry should interact with the commercial fishing sector. However, the presentation by Dominion indicated their work was illustrating the project was not economically feasible due to the regulatory burdens that were both encountered and potentially to be encountered.

During the reporting period the OPSE Coordinator communicated with the VA Marine Resources Commission to obtain fisheries data relevant to the black sea bass (*Centropristis striata*) and summer flounder (*Paralichthys dentatus*) catch to develop data products consistent with the Mid Atlantic Regional Council on the Ocean (MARCO) Marine Life Data Analysis Team (MDAT) to display species shifts related to changes in temperature or climate. Coordination with Duke University and Nature Conservancy was implemented with guidance from the Duke Team and support from the Conservancy staff. VA Marine Resources Commission indicated those data could be made available for such conclusions but may require analysis to ensure the Rule of 3 is not broken, ensuring data protection standards. The VA Marine Resources Commission indicated those catch and landings data are available to the mid-1990s and it was likely shifts in landings could be observed. Those data will be delivered under the FY16 grant and integrated, if feasible, into the fisheries data synthesis being conducted by the MDAT.

In late 2016, the OPSE Coordinator reached out to the commercial fishing industry, specifically the pot and trap sector, to reopen the dialogue on gear loss due to ship strike. Anecdotal conversations had indicated the pot and trap industry had suffered from losses due to ship strike by the shipping industry in areas outside of designated shipping lanes. These losses were identified as significant by these representatives. After significant delays in response, the commercial industry contacts that had initially indicated significant impacts and loss responded indicating they had undergone recent changes in fishing methods to seek new species, no longer utilizing pot and trap. Those contacts provided new representatives in the commercial sector to continue the conversation. The goal of such interaction is to record and formally document gear loss with the outcome of minimizing economic impacts to each industry with the potential to maximize their activities. Conversations with the new sector representatives have been difficult to obtain.

In preparation for the upcoming FY16 grant, the OPSE Coordinator began the research on electromagnetic field impacts on fisheries including threatened and endangered fishes including Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) for the purpose of developing a communication piece for the industry.

In March, 2017, the OPSE Coordinator was requested to assist the MARCO Executive Director by sharing contacts to market the upcoming Healthy Ocean Ecosystem Indicators workshop

planned for Delaware. The OPSE Coordinator re-engaged in the regular meetings of the MARCO board and prepared for the April 2017 meeting at Rutgers University *Changing Ocean Conditions Related to Fisheries* in New Brunswick NJ. Further work on the Healthy Oceans Indicators Workshop will continue under FY16.

Additionally, the OPSE Coordinator assisted in the development of marine debris management issues as they relate to the clam industry on the sea side of Virginia with a specific focus on clam netting. At the request of the Marine Debris Management Coordinator at Longwood University and the VA CZM Director, the OPSE Coordinator communicated with several eastern shore-based industry representatives, including growers and the non-governmental entity that represents all shellfish growers of the Commonwealth, to understand the overall issue associated with clam netting as a marine debris. These conversations quickly determined that the industry was aware that this material might be considered a marine debris and that they were very willing to assist to address this issue. The industry representatives all expressed the same opinion that they would revisit the process that was employed some time ago to identify and a representative of the industry would immediately remove any material upon discovery. The industry stressed they wanted to handle the issue from within and with as little publicity as possible, stating they would take immediate responsibility for the issue in an environmentally sensitive manner. A meeting was organized with representatives from the industry to discuss the issue and develop an implementation plan that could be immediately set in motion.

Appendix 1: Mid-A RPB IJC white paper on fishing

Appendix 2: Public Open House Draft Mid-Atlantic Ocean Action Plan (Save the Date)

Appendix 3: MDAT Abundance Group Notes

Appendix 1

Mid-A RPB IJC white paper on fishing

Improving Interjurisdictional Collaboration on fisheries science and management

Commercial and recreational fishing are important economic activities in the Mid-Atlantic region, and both are part of our culture and sense of place. In 2012 (the last year for which an analysis was available for this report), commercial fishermen in the Mid-Atlantic Region landed 751 million pounds of finfish and shellfish, earning \$488 million in landings revenue. Landings revenue was dominated by sea scallops and blue crabs. In 2012 more than 2 million recreational anglers took 14 million saltwater fishing trips. Purchasing boats, fuel and fishing gear, and chartering vessels generates billions in sales every year. The Mid-Atlantic region's key recreational species include striped bass, summer flounder, Atlantic croaker, black seabass and bluefish. Many of these were released rather than kept. Fishing is also important for sustenance, as catching fish is a good way to put nutritious, inexpensive protein on the table.

Fishing is managed by each state in waters out to 3 nautical miles. The Atlantic States Marine Fisheries Commission coordinates regulations among the states and with the Federal government for species that are primarily caught within state waters. At the Commission, each Atlantic state is represented by three Commissioners: the director of the state's marine fisheries management agency, a state legislator, and an individual appointed by the state's governor to represent stakeholder interests. These Commissioners participate in deliberations in the Commission's main policy arenas: interstate fisheries management, fisheries science, habitat conservation, and law enforcement. Through these activities, the states collectively ensure the sound conservation and management of their shared coastal fishery resources and the resulting benefits to the fishing and non-fishing public. The National Marine Fisheries Service and the U.S. Fish and Wildlife Service are also voting members of the Commission. Meetings are open to the public and are broadcast via a webinar for stakeholders who cannot attend in person.

From 3 to 200 miles, fishing is regulated by the National Marine Fisheries Service, based on recommendations from the Mid-Atlantic Fishery Management Council. The Council's purview extends from New York to Cape Hatteras, NC, similar to that of the Mid-Atlantic Regional Planning Body. The Council is made up of 21 voting members and four non-voting members. Seven of the voting members represent the constituent states' fish and wildlife agencies, and 13 are private citizens who are knowledgeable about recreational fishing, commercial fishing, or marine conservation. The National Marine Fisheries Service is also a voting member. The four non-voting members represent the Atlantic States Marine Fisheries Commission, the U.S. Fish and Wildlife Service, the U.S. Department of State, and the U.S. Coast Guard. Like the Commission, meetings are open to the public and can be followed anywhere by webinar. The Council's recommendations have been successful in rebuilding the fish stocks under its purview. The Mid-Atlantic is the only region in the country which has no stocks that are considered overfished. The Council reacts quickly to address overfishing when it occurs. The Atlantic Coastal Cooperative Statistics Program (ACCSP) serves as a forum for collaboration between states and the Federal government on the collection and sharing of data needed for fisheries management. Members include Federal agencies (NOAA and the US Fish

and Wildlife Service), all the Mid-Atlantic RPB member states, the Mid-Atlantic Fishery Management Council, the Atlantic States Marine Fisheries Commission and other entities. The ACCSP sets standards for data quality; collects, audits, archives and shares data among members; and develops data collection systems for its members to use.

Despite the several successful forums for collaboration between states and the Federal government about fisheries management, there are several ways in which we can improve collaboration. The RPB proposes to take the following steps in increase collaboration on fisheries management:

a. Build closer relationships and better understanding between NOAA and state fisheries agencies by convening an annual meeting between regional NOAA leadership and state fisheries directors to discuss areas of mutual interest. A day-long meeting was held on August 3, 2015 in advance of the Atlantic States Marine Fisheries Commission meeting and served as a useful forum to explain positions and develop ideas for collaboration. States and NOAA should commit to convening a similar meeting at least once per year.

b. Improve our understanding of and preparation for climate change impacts on fishing by supporting a workshop for fisheries managers and scientists to share information about climate change. Topics should include predictions about the movement of fish stocks, changes in habitats, and discussions of management implications of shifting populations. The workshop should also discuss collaborative research on this topic. NOAA will consider hosting such a workshop as part of a “regional action plan” on fisheries climate science that it is developing.

c. Work to identify and monitor fishing impacts on the environment and the impacts of other human activities on fishing in collaboration with the Mid-Atlantic Fishery Management Council. The Council has established an Ecosystems and Ocean Planning Committee. RPB members or their representatives should participate in workshops and other discussions hosted by the Committee to ensure that RPB interests are understood and addressed by the MAFMC. By participating on the Committee’s Advisory Panel, the RPB will avoid duplicating efforts while still addressing this important topic.

d. Improve communication between Tribes, state governments and Federal agencies about fishery management. In states that have Federally recognized Tribes, Federal and state officials will meet jointly with all interested Tribes (state and Federally recognized) to share perspectives on fishery management and other matters of mutual interest. Face to face meetings should occur at least once per year at a time that is convenient for the Tribes.

e. Improve understanding of recreational fishing in the region by convening a workshop for leaders of recreational fishing groups. The workshop will provide information to the fishermen about fisheries science and management and will serve as a forum in which to listen to angler concerns. The intended outcomes of the meeting will be: better informed leaders of recreational fishing organizations, ideas about better ways to reach out to the angling public, and improved understanding of the interests and concerns of the recreational fishing community. The program should be extended if successful and if funds are available.

f. Work to engage and involve the fishing community in ocean management and identify ways

to reflect fishers' knowledge in regional ocean planning and data products. The RPB and its member entities should foster a discussion among states, Tribes, the MAFMC and NOAA about ways to alert fishermen to upcoming ocean management decisions early enough to allow them to engage and ensure that their knowledge is considered in the RPB's work. Further discussion of early engagement should include talking to fishermen about their preferences for learning about upcoming activities and events and documenting examples of successful engagement.

g. Collaborate to improve Essential Fish Habitat conservation. NOAA will discuss ways to improve collaboration with the Mid-Atlantic Fishery Management Council and with Federal agencies required to consult with NOAA on the protection of Essential Fish Habitat. With the MAFMC, NOAA will continue a recent initiative to improve the Essential Fish Habitat consultation process. With Federal agencies required to consult with NOAA when projects could affect EFH, NOAA will provide training for staff on Magnuson Stevens Act requirements and how to conduct EFH assessments.

Note that fishery management is separate from the RPB's work and the MAFMC has guidance documents summarizing the Council process, how to get involved, and how individuals can have more impact in their work at:

http://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/514c937fe4b0451f3f90e6af/1363972991829/Navigating_Council_Process_Booklet.pdf.

Appendix 2

Public invited to Open House in Virginia Beach on Draft Mid-Atlantic Ocean Action Plan

WHAT: The Mid-Atlantic Regional Planning Body (RPB) invites the public to attend an Open House in Virginia Beach to consider a Draft Mid-Atlantic Ocean Action Plan. Developed by the RPB, the Draft Plan outlines a series of actions on how federal and state agencies, tribes and the Mid-Atlantic Fishery Management Council may better collaborate on ocean governance and decision-making to ensure healthy, productive, and resilient marine ecosystems and sustainable ocean uses off the Mid-Atlantic coast, an area that includes state and federal waters off Virginia, Maryland, Delaware, Pennsylvania, New Jersey and New York.

Prior to the Open House, the draft Plan will be available at: <http://www.boem.gov/MidA-New/>

WHO: The Mid-Atlantic Regional Planning Body (MidA RPB) is made up of representatives from Federal, State, and Tribal entities and the Mid-Atlantic Fishery Management Council. It was established in 2013 to implement and advance ocean planning in the region by coordinating with stakeholders, scientific, business, and technical experts, and members of the public to identify and address issues of importance to the region. The Open House will be hosted by MARCO[1] on behalf of the MidA RPB.

WHEN: Tuesday, July 12, 2016. 6-8pm

WHERE: Virginia Aquarium & Marine Science Center, 717 General Booth Blvd, Virginia Beach, VA 23451

LEARN MORE: www.MidAtlanticOcean.org/YourOceanPlan

About MARCO

Established by the Governors of the five coastal Mid-Atlantic states (Delaware, Maryland, New Jersey, New York, and Virginia) in 2009, the Mid-Atlantic Regional Council on the Ocean (MARCO) is a partnership to address shared regional priorities and provide a collective voice for the region. The five MARCO states focus on four-shared priority areas identified in the Governors Agreement: climate change adaptation, marine habitats, offshore renewable energy and water quality. MARCO also uses regional ocean planning as a means to advance these

Appendix 3

MDAT Abundance Group Notes

- What are the definition of terms?
 - Define sensitive life stages
- Without informed data, are we ready to identify Ecologically Rich Areas?
 - How do we know how much data is sufficient, for each criterion?
 - How much information do we have that represents all life stages?
 - What is the purpose of the data?
 - Who determined, and how, which component the data is listed under?
 - What was used to determine the components to inform the data layers? Was Essential Fish Habitat used?
 - Model (and other product) uncertainty should be represented somehow
 - Need to provide detailed, transparent metadata
- Could the Sargasso Sea be a proxy for juvenile sea turtles, and eels?
- Use of more coastal/local data:
 - Integrate localized data and research on life stages for species (reference State supported/collected or Academic research)
 - The coastal data, not included in the MARCO region, should be considered (Ex. Horseshoe crabs and sea turtle estuarine habitat utilization)
 - Include expert knowledge for birds and fish at various life stages
 - Incorporate more local knowledge, especially tribal and industry
 - Avian and Mammal tracking data collected by States could be used to understand behavior
 - Include embayments and coastal connections
- How do we address species that were not accounted for in the modeling efforts (MDAT avian, fish, mammals)?
- Input being obtained today is consistent with the input provided at the Science Community Workshop held in March 2016
- How have Fishery Management Plans affected abundance and/or size of species?
- Look at high abundance relative to population size (Ex. Right Whales)
- Which is more informative: Individual or Aggregate data?
- Include Functional Groups or Groupings

- Change in abundance is neither a positive nor negative indicator
- Consider range expansion or species shift
- How do we include multi-decadal shifts in oceanographic parameters, which we don't have long term data for?
- Capture economically important fish species abundance
- Additional fish data to include:
 - Include acoustic surveys for fish
 - Include the ASFMC Trawl Surveys (NEAMAP)
 - How should these be grouped?
 - Economically sensitive important shellfish
- Unmanaged forage species have recently been identified as a management group by the MAFMC
- Combine area and species groupings to determine highest priority
- Do we know the least amount of area for the most/highest number of animals?
- Avian compendium has eight categories (Ex. Feeding).
 - Clarify the Avian Compendium groupings, data and summaries
 - Behavior and Age are in Avian Compendium and should be included or evaluated
 - Avian Compendium includes ecological behavior obtained from tracking data
- ERAs may have temporal aspects:
 - Ecologically Rich Areas may be managed differently based on season
 - Ecologically Rich Areas may be important beyond temporal boundaries – even if we define a period that an ERA is “active”, it may be important to the set of species during that time because of characteristics of that area at other times of year, or year-round
 - Could an Ecologically Rich Area be defined by oceanographic parameters that may shift over time, instead of fixed in space?
 - Oceanographic parameters may define why species are present (Ex. Upwelling affecting temperature or food availability)
 - The temporal aspect needs to be highlighted when relevant
 - Include Temporal aspects – ERAs could have temporal component
 - Evaluate the time spent by species at each location based on life stage
 - How to capture change over time and seasonal variation

- How do the Ecologically Rich Areas and any area Fisheries Interactions inform each other?
- Expert Knowledge
 - What are the terms that should be included when considering expert knowledge as a model validation?
 - Establish a protocol that outlines consistent standards for data submission
 - Talk with Kevin St Martin from Rutgers - expert input from him on economically important fish species?
- What products can be used to create new models and products?
- Survey Effort should be considered when determining abundance
- What informs the summary layers and how do the users acknowledge those data?
 - Which species are being included? Extent is very important. The bird group layer may be very different from the individual species of bird.
- Include more finely divided groups (Avian comment)
- Multi-taxa space use should be considered (Ex. Squid feeding invertebrates)
- The Biodiversity Research Institute (BRI) surveys and analysis should be evaluated
- Clarify the purpose for the MDAT and accessible metadata

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